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United States Patent [19]

Eichel et al.

[11] **Patent Number:** 5,238,686[45] **Date of Patent:** Aug. 24, 1993[54] **SUSTAINED-RELEASE PHARMACEUTICAL PREPARATION**[75] **Inventors:** Herman J. Eichel; Brent D. Massmann, both of Columbus, Ohio[73] **Assignee:** Kinaform Technology, Inc., Dayton, Ohio[21] **Appl. No.:** 573,241[22] **Filed:** Aug. 27, 1990**Related U.S. Application Data**

[63] Continuation of Ser. No. 17,988, Feb. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 844,676, Mar. 27, 1986, abandoned.

[51] **Int. Cl.⁵** A61K 9/62; B01J 13/22[52] **U.S. Cl.** 424/461; 424/463; 424/494; 424/495; 428/402.24; 514/963[58] **Field of Search** 428/402.24; 424/461, 424/463, 495, 494; 514/963[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

A sustained-release pharmaceutical preparation comprising an admixture of uncoated and/or single walled water soluble drug, such as aspirin, and dual walled coated drug. The dual wall structure has an inner wall microencapsular control coating, such as ethyl cellulose, and an outer wall enteric coating such as cellulose acetate phthalate. The dual walled coated drug has a delayed, gradual, long-term release which takes place in the intestines while the uncoated and/or single walled drug has immediate therapeutic properties upon dissolution in the stomach. The outer wall enteric coating may be applied to microencapsulated core drug by a coacervation, spray coating or other process.

6 Claims, No Drawings